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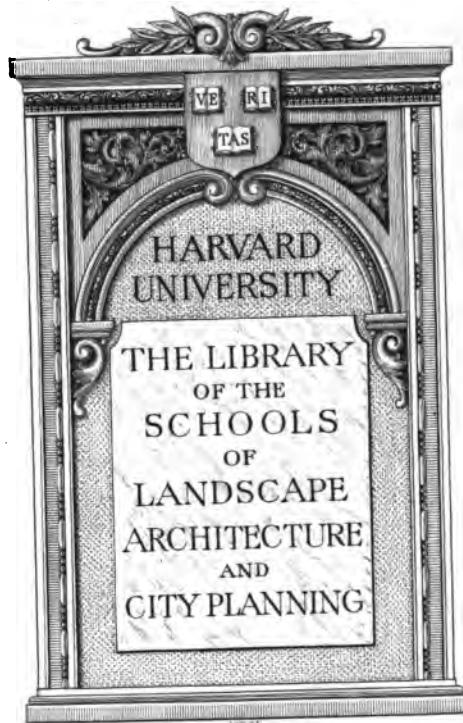
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# LANDSCAPE PHASE

OF THE

## University of California Plan

BY

**WARREN H. MANNING**

Landscape Architect

BOSTON MASS.

1898

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HARVARD UNIVERSITY

The Library of the Depts.

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Gift of Arnold Arboretum

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## Landscape Phase of the University of California Plan.



THE regents of the University of California, with a view to securing in advance of reconstruction an ideal plan for the University, have invited the architects of the world to enter a competition for an architectural plan.

When they have secured this, it is to be hoped that they will also be able to fix the plan and a consistent policy regarding it so firmly that their successors will not depart from it.

The authorities of nearly all of our important educational institutions have, in the beginning or at different periods of the growth of these institutions, adopted a more or less comprehensive plan of grounds, or a style of architecture, with the intention that future additions should conform to it, but such preconceived plans have for various reasons been radically departed from or only partially realized. The original designers were sometimes unable to anticipate the future growth of the institution, or, when this was done and the first plan was sufficiently comprehensive for all time, later administrators, induced by temporary financial embarrassment, disposed of land (of which there was often a liberal endowment) which was essential to the development of the plan. Nearly every growing school has had occasion to regret such a short-sighted policy when compelled to make new purchases at a large advance over the price for which school property had previously been sold. Again, administrators have been weak enough to permit departures both from the established plan of grounds and from the style of buildings, purely for local or personal considerations, such as the presence of a temporary building, a group of unimportant trees, an established path or an individual's desire to design or have designed a building markedly different from the established type and to locate it in a position where its individuality would be conspicuously evident.

The Programme begins with the statement that "University" means "the collection of buildings." In another paragraph it states that the provision for access and communication is an essential part of the Programme; that the arrangement of the buildings should harmonize with the topography and picturesque nature of the grounds, and that the fine tree growth, especially that within one hundred feet of the brook, must be preserved; but in a brief section devoted to approach and communication are the following

words: "This whole arrangement, naturally subordinate to the general conception of the *ensemble*, does not allow of more detailed directions." This statement, the few incidental references to a general plan of grounds, and the fact that approaches and means of communication other than buildings are not called for on the preliminary or final plans, make it appear that there was no intention on the part of the framers of the Programme to invite landscape-architects to take part in this competition.

The founder of the Stanford University sought first the advice of a landscape-architect, who, after having determined upon the site (the present site being a second choice), outlined a preliminary plan of grounds, and then prepared in conjunction with the designers of the buildings a comprehensive scheme which, up to this time, has been only partially carried out. Similar action in reference to the whole or a part of their grounds was taken by the trustees of the American University at Washington, the Washington University at St. Louis, also at Harvard, Yale, Cornell, Princeton, Bowdoin, Amherst, Brown, Columbia, University of Minnesota, Bryn Mawr (Pa.), Smith (Mass.), Lake Forest (Ill.) and Drew Seminary (N. J.).

The landscape problems presented by the site in question are so unusually intricate that the advice of a skilled landscape designer would have been of much assistance in the preliminary stages of the undertaking to determine in advance the areas required for each department, the practicability of providing for all of these on the site selected, and to consider, in conjunction with the architects, the character and disposition of buildings and means of communication, and their association with existing and proposed plantations, all these to be considered as elements of and related to the landscape of the chosen site.

Having made an examination of the grounds with the topographical plan in hand to determine for my own satisfaction how far it was practicable to make adequate provision for the requirements of the Programme, I will here review circumstances that may prove of interest to those who have entered the competition. The topography and the wooded areas appear to be correctly indicated upon the maps provided. The omission of the alternate contours on the upper levels, though clearly referred to in a note, is likely to mislead one. Important new wooden buildings, probably constructed since the plan was made, are omitted, but if, as stated, the existing buildings are to be ignored, this is of no moment. The direction and character of the important views from different points on the grounds are omitted; so, too, are a number of important individual trees. More information concerning the character of groups of trees and fine individual specimens, some of which are very tall with high trunks, and others very broad-spreading with branches almost touching the ground, would have been of material assistance to a designer.

The area within the present boundaries, and including land that may be acquired on the north, is about 350 acres. I was assured by

one of the trustees that no other adjoining land could be secured. From this estimate must be excluded about fifty acres of wooded land along the water-courses, and seventy-five acres of land having a slope of from forty to eighty feet in a hundred.

Upon the remaining area are the following comparatively flat sites, of which I give approximate dimensions, the difference in elevation between the lower and upper levels of the tracts and the least elevation between each tract and the one following it in the list given below, and which is also the one nearest to it on the plan:—

	DIFF. IN ELEVA- TION.	BELow NEXT TRACT.
Near Agricultural Experiment Garden..	200 x 300 ( 1.3 a.)	12 ft. 16 ft.
Orchard and south of orchard.....	800 x 1,000 (18.3 a.)	70 " 24 "
Westerly End of Campus.....	400 x 600 ( 5.5 a.)	20 " 24 "
Easterly End of Campus.....	600 x 1,200 (16.5 a.)	90 " 8 "
North of Bancroft Way, lower end.....	300 x 400 ( 2.7 a.)	16 " 16 "
North of Bancroft Way, upper end.....	400 x 900 ( 8.3 a.)	32 " 20 "
End of Piedmont Way.....	200 x 300 ( 1.3 a.)	20 " 20 "
Reservoir Site.....	200 x 300 ( 1.3 a.)	15 " 520 "
Hill Top towards the N. E.....	400 x 500 ( 4.5 a.)	32 "
		59.7 a.

The Programme requires that provision be made upon the site for roads upon easy grades and other means of communication, for campus, yard, reservoir, botanic and other gardens, an open-air drill-field, sheltered courts for drilling twelve companies of infantry, one company of engineers, a squadron of cavalry and a battery of artillery, an armory, an auditorium for 5,000 people and another for 1,500, with a connecting garden for celebrations, a museum, a library for 750,000 volumes, gymnasia "to occupy a large space" and the full complement of buildings for eleven administrative and fifteen educational departments, together with ample provision for future extensions, all planned with the assumption that there will ultimately be 5,000 students. [At Harvard there are now in round numbers 3,000 students, at Yale 2,600, at Pennsylvania 2,900, Princeton 1,100, Cornell 1,800, Columbia 2,400, University of Chicago 1,850, University of Minnesota 2,575, University of Wisconsin 1,600, Stanford University 1,200.]

The site indicated for a reservoir will undoubtedly all be required to store the large amount of water needed to tide over the long rainless period during which the supply of ground water is also limited, but possibly a building could be constructed over it.

The high hill-top site is hardly available for a large group of buildings.

Including these sections the area of the tracts of land referred to upon which large groups of buildings can be arranged conveniently without undue cost comprises only about sixty acres.

In this connection the following estimates are instructive. As most of the estimates given in this article are based upon measurements scaled from maps, they must be accepted as approximate only:—

	AREA.	AREA BUILDINGS.	APPROACH TO COMMUNICATIONS.
Harvard A.....	9.91 a.	2.35 a.	7.56 a.
"      B....	21.80 a.	4.19 a.	17.68 a.
"      C....	61.16 a.	7.66 a.	53.50 a.
Yale A.....	10.90 a.	2.82 a.	8.08 a.
"      B....	16.64 a.	3.52 a.	13.12 a.
"      C....	29.97 a.	4.65 a.	25.32 a.
Columbia A.....	11.82 a.	4.73 a.	7.09 a.
"      B....	17.55 a.	5.43 a.	12.12 a.
Princeton B....	19.28 a.	6.94 a.	12.34 a.
"      C....	45.79 a.	7.98 a.	37.81 a.

A represents a section of ground so fully occupied by buildings as to permit no extensions, as, for example, the college-yard at Harvard and the buildings immediately about it. B represents a section the greater part of which is occupied by buildings but where some extensions could be made, as on the grounds of Columbia College, while C represents the area reserved in the vicinity of principal buildings to provide for future growth, not including, however, distant outlying land, like that held by Columbia in the city proper, or by Harvard in outlying towns and at the Soldiers' Field.

On the twenty-four acres comprising the grounds of the Chicago University upon the Midway Plaisance it is proposed to place buildings covering about six acres.

Under A the minimum acreage of approach and communication (including the college-yard) to the acreage of buildings (ground area) is about one-and-one-half to one at Columbia, about three to one at Harvard and at Yale; and at Stanford University (buildings planned, not yet erected) the proportion is nearly four to one.

At Harvard and Yale the college-yards are often uncomfortably crowded on Class Days. At Columbia, with the greater number of floors and consequent larger capacity of halls about the college-yard, the crush in the yard is likely at times to be very uncomfortable if not dangerous. The same ratio between buildings and grounds prevailing at Harvard, Yale and Chicago Universities, where the grounds are comparatively flat, can hardly be adopted at Berkeley, where there is a difference in grade on the areas which I have specified of from 12 to 90 feet, a difference in elevation of adjoining areas of from 80 to 24 feet and in one case 520 feet,—differences which will require say four and one-half acres of ground to each acre of buildings within these areas, from a practical standpoint alone. From an aesthetic standpoint, upon which much stress is very properly laid, more land will be required to maintain a proper proportion between buildings and grounds, to secure at certain places satisfactory perspectives, and to provide for plantations, which will

be quite as important elements in a wholly artistic result as will be the buildings themselves. The location and composition of all plantations bearing any relation to the buildings and grounds about them should be carefully considered as the study of the plans of these buildings and grounds progresses.

As a basis for an estimate of the amount of space required for the various departments for which provision is to be made at Berkeley, I have endeavored to determine the ground area of buildings or sections of buildings devoted to similar purposes at other colleges.

At Harvard, and at Columbia, there is used for administration purposes about one acre of floor-space, and at Princeton and Cornell considerably less than this.

Accommodations for 750,000 volumes are to be provided at Berkeley. The Harvard Library, containing 412,000 volumes and 310,000 pamphlets, covers a little less than one acre. The building is used for no other purpose and has recently been reconstructed to utilize the room to better advantage. At Yale the library building, with 235,000 volumes, covers one-half acre. At Princeton the library building, containing 182,000 volumes, covers three-fourths of an acre. At Pennsylvania and Cornell the library covers about one-half acre each, and at Columbia nearly one acre.

The museum at Harvard is planned to cover about twelve acres of ground, and about the same area is reserved for this purpose at the University of Pennsylvania. At Princeton, Yale, Columbia and Cornell the ground actually covered by buildings devoted in whole or in part to a museum appears to be less than one-half acre.

Saunders Theatre at Harvard, College Hall at Yale, and Assembly-hall at Columbia, each accommodating about 1,500 persons, cover less than one-half acre. An assembly-hall to provide for 5,000 persons would occupy about two acres. If in addition to these a garden were provided, about two acres more would be needed. The present outdoor meeting-place for Class-day exercises at Harvard, back of Hollis Hall, containing about one-fourth acre, is to be superseded by the "flatiron" piece of a little less than an acre in front of Memorial Hall.

No precedent has been found at other universities to determine the space required to provide for the military establishment proposed at Berkeley. Cornell provides one-and-one-half acres for an armory and parade-ground, and at the University of Minnesota the armory covers one-half acre and an adjacent "athletic field" two acres. A competent authority states that a drill-field for exercises in the open air should be not less than two acres in extent with one acre of level ground, and that four acres of rolling with one acre of level ground would be better. For squad-drill an armory should have a floor-space of about 150' x 200'.

The ground actually covered by gymnasia in the universities referred to is one-half acre or less.

Where especially equipped athletic grounds are provided they

vary in size — at Princeton between seven and eight acres are provided, at Yale twenty-two acres, in the Soldiers' Field at Cambridge twenty acres, and in the Ohio Field of the New York University twenty acres.

At Harvard nearly three acres of college ground is covered by dormitories, mostly three to five story buildings, which accommodate only about one-third of the students; at Yale and Cornell two and one-fourth, and at Princeton and Pennsylvania one and one-fourth acres are covered by such buildings.

At Harvard club-houses occupy about one acre of ground, at Princeton about one-half acre.

The infirmary occupies about one-tenth acre at Harvard and at Yale, and less than a quarter of an acre at Princeton and at Pennsylvania.

Centrally located structures for general service, though not ordinarily provided, should give the most convenience and economical results in the generation of power, heat and light, the maintenance of buildings and grounds, the storage of supplies, vehicles, etc.

As separate buildings for the departments of Philosophy, Pedagogy, History and Political Science, Ancient and Modern Languages and Mathematics are not ordinarily provided, it may be assumed that a place would be found for these in the buildings of other departments.

For the department of Jurisprudence about one-half acre is appropriated at Harvard, a larger area than this at Columbia, and smaller areas at Yale and Cornell.

The buildings devoted to Physics at Harvard, the Massachusetts Institute of Technology, Cornell and Columbia occupy from one-fourth to one-third acre of ground.

The buildings at the Harvard Observatory cover about one-half acre of ground.

The buildings for the department of Chemistry at Cornell, the University of Pennsylvania, Harvard and Yale cover from one-fourth to one-third acre, and at Columbia, Havemeyer Hall occupies over one-half acre.

At Harvard and Yale about one-fourth of an acre is devoted to Fine-Arts, but at the other institutions referred to from one-eighth to one-sixth of an acre is appropriated.

Over one acre of ground is occupied by structures devoted chiefly to Natural History at Harvard, over half an acre at Columbia, and from one-fourth to one-third of an acre at Cornell and the University of Pennsylvania.

The Harvard Botanic Garden contains a little over six acres, some of which is occupied by buildings for the herbarium and by greenhouses. A much larger number of species can be grown at San Francisco than at Cambridge, and fully as much room will be required to bring together a satisfactory representative collection. A complete collection could not, of course, be attempted in such a

garden. I am told that a large tract of land lying at some distance from Berkeley may be available for this purpose.

At least one acre will be required to provide for such buildings as are called for in the agricultural section, and very likely considerably more, if the sheds for the practical demonstration of the use of agricultural implements are made fully adequate for this purpose. For an experimental field of any practical value twenty acres would seem to be necessary. Including the orchard, nearly this amount of land is already devoted to this purpose at Berkeley. Lands outside of this college property are referred to as being available for farming purposes, and it is upon such land that extensive experimental work must be done. At Cornell over one hundred acres is devoted to experiments in horticulture.

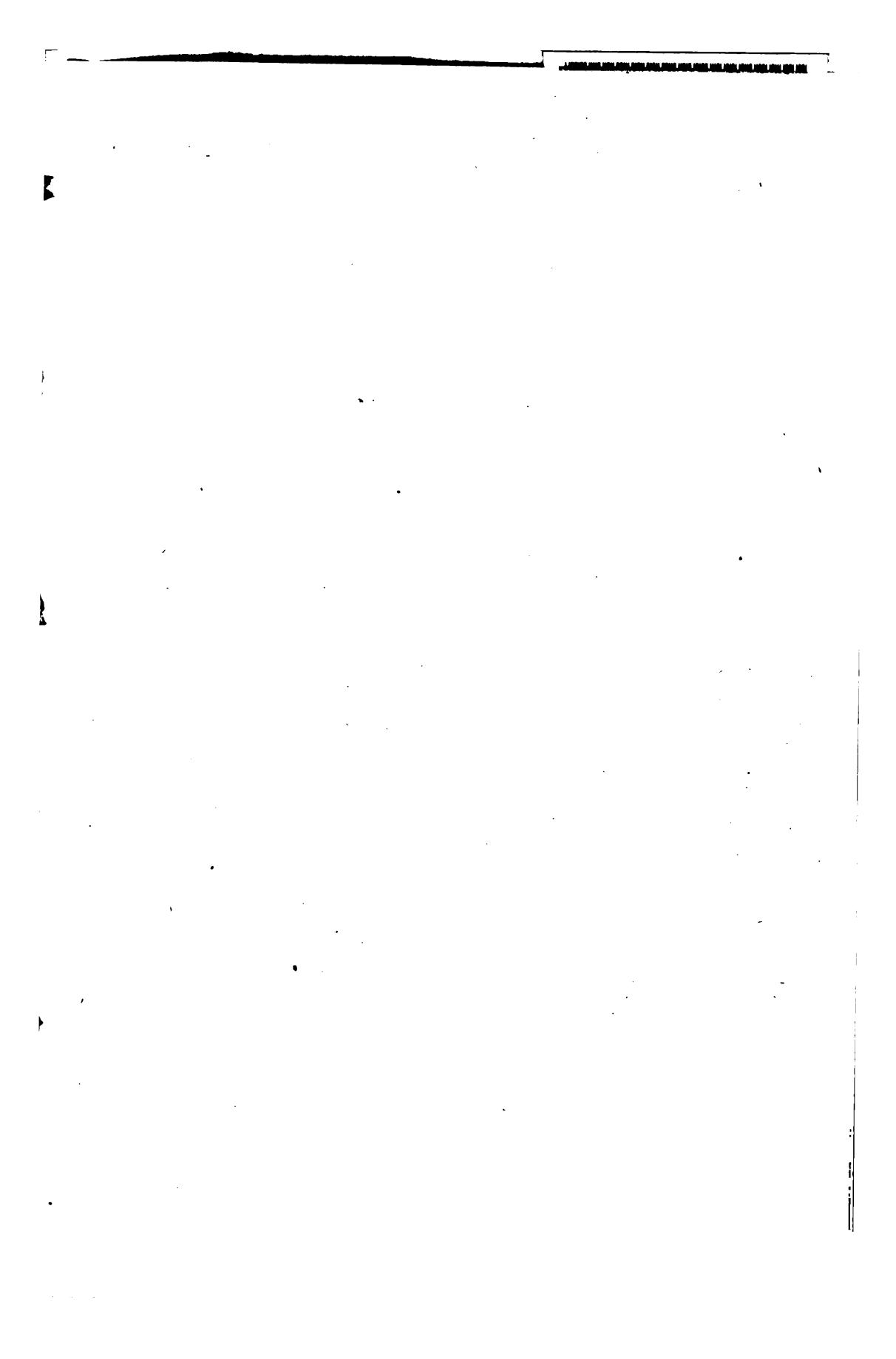
For the last three departments named in the Programme, viz, Mechanical and Civil Engineering, Mining and Draughting, a building covering two acres will probably be required. Sibley College at Cornell occupies over two-and-one-half acres, while at Yale one-and-three-quarters acres, and at the Massachusetts Institute of Technology nearly one acre is occupied by buildings for this purpose; at other colleges from one-third to one-half acre.

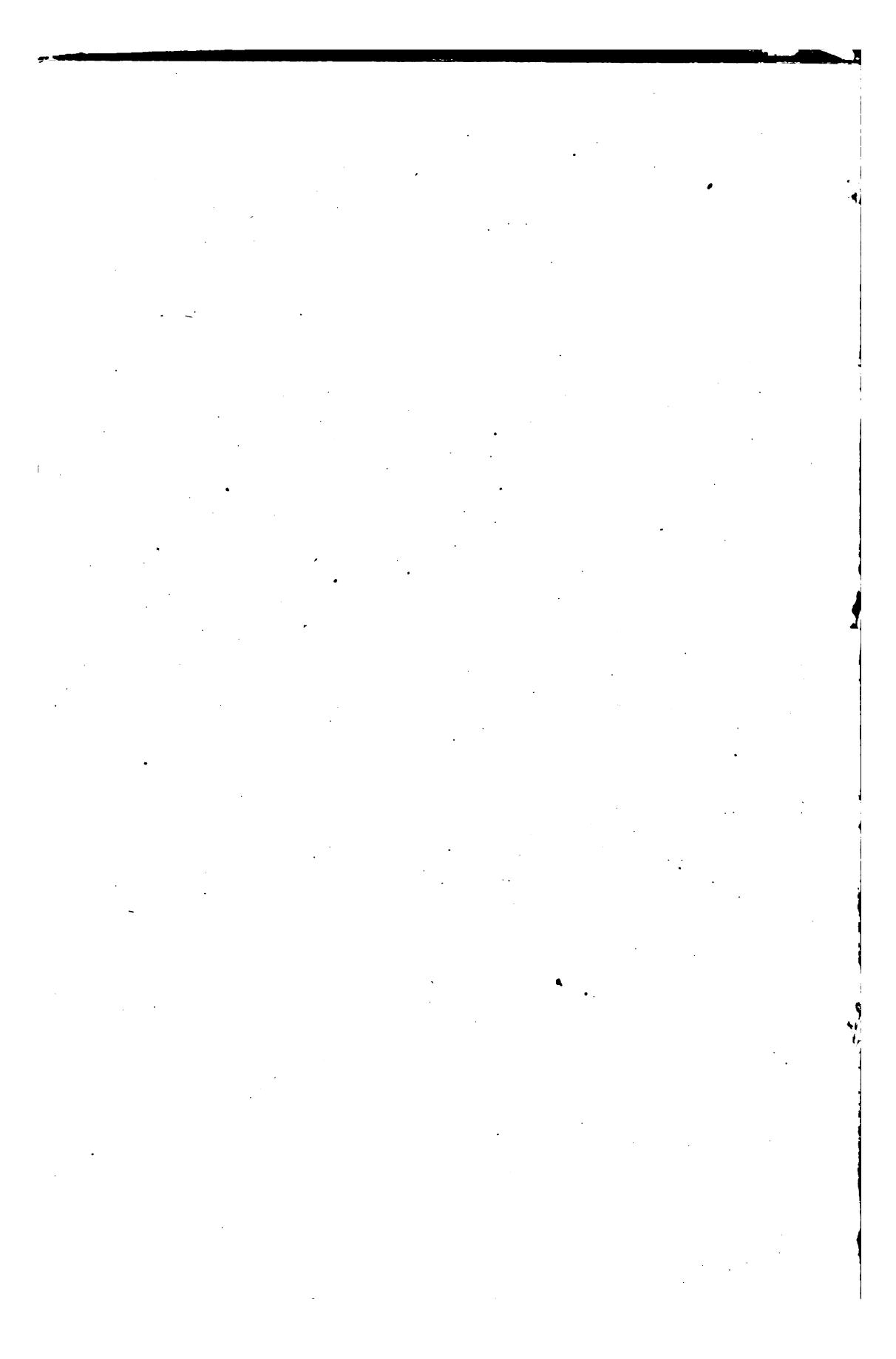
In making the following estimates, it is assumed that at least the maximum amount of space required for the various specified purposes at other universities will ultimately be required at Berkeley:—

	BUILDINGS.	GROUNDS.
Administration.....	1.	
Library.....	2.	
Museum.....	12.	
Assembly-hall for 1,500.....	.5	
Assembly-hall for 5,000.....	2.	
Outdoor Assembly.....		2.
Armory and Military Buildings.....	1.5	
Covered Drill Court.....	2.	
Drill Field.....		4.
Gymnasia.....	.5	
Athletic Grounds.....		20.
Dormitories.....	5.	
Club-houses.....	.5	
Infirmary.....	.5	
General Service.....	2.5	
Jurisprudence.....	.5	
Physics.....	.5	
Observatory.....	.5	
Chemistry.....	.5	
Fine-Arts.....	.5	
Natural History.....	.5	
Botanic Gardens.....		6.
Agriculture.....	1.	
Experimental Fields.....		20.
Engineering.....	2.	
	36.	—
		52.

If these estimates are fair and reasonable, as I have endeavored to make them, it would appear from this that it is impracticable to provide adequately on the site for all that is called for on the Programme. If for each of the thirty-six acres of buildings four-and-one-half acres of ground is reserved for approach and communication, one hundred and sixty-two acres will be required, and this will exceed the fifty-nine-and-seven-tenths acres of readily available ground by one hundred and two and three-tenths acres. Of the two hundred and twenty-five acres of possibly available ground, only sixty-three acres will remain upon which to provide for the fifty-two acres of fields and gardens required, and for the approach and communication between different parts of the grounds, if all the buildings and their future extensions are placed upon this site. It will be necessary to crowd these buildings on rugged and irregular land. This will result in picturesque grouping and treatment much more in keeping with the character of the topography and landscape than if anything approaching a rectangular arrangement is attempted. It will also add much more to the cost and difficulty of the undertaking, result in the mutilation of a greater number of trees, unless this is very carefully guarded against in the elaboration of the plan and in the execution of the work upon the grounds, and the question of providing approach and communication upon easy grades between the various parts of the grounds will be an exceedingly complicated one. In view of these facts, it may be unwise to look upon this site as the home of all the departments of the University for all time. If it can be determined in advance which departments are likely to outgrow any provision that can be made for them upon this site, these should be provided for in a temporary manner only. If American universities continue to expand and add to their curricula as they have done in the past fifty years, many of them will sooner or later completely outgrow their present facilities. At some of our important institutions this fact is fully recognized, and large areas of land are now being secured at some distance from the present site at a low cost, presumably with a view to their ultimately becoming the home of the institution.

WARREN H. MANNING.







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